

<<量子色动力学讲义/LECTURE>>

图书基本信息

书名：<<量子色动力学讲义/LECTURES ON QUANTUM CHROMODYNAMICS>>

13位ISBN编号：9789810243319

10位ISBN编号：9810243316

出版时间：2001-11

出版时间：World Scientific Pub Co Inc

作者：Smilga, Andrei

页数：322

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<量子色动力学讲义/LECTURE>>

内容概要

Quantum chromodynamics is the fundamental theory of strong interactions. It is a physical theory describing Nature. Lectures on Quantum Chromodynamics concentrates, however, not on the phenomenological aspect of QCD; books with comprehensive coverage of phenomenological issues have been written. What the reader will find in this book is a profound discussion on the theoretical foundations of QCD with emphasis on the nonperturbative formulation of the theory: What is gauge symmetry on the classical and on the quantum level. What is the path integral in field theory? How to define the path integral on the lattice, keeping intact as many symmetries of the continuum theory as possible? What is the QCD vacuum state?

What is the effective low energy dynamics of QCD? How do the ITP sum rules work?

What happens if we heat and/or squeeze hadronic matter?

Perturbative issues are also discussed: How to calculate Feynman graphs? What is the BRST symmetry? What is the meaning of the renormalization procedure? How to resum infrared and collinear singularities? And so on. The book is an outgrowth of the course of lectures given by the author for graduate students at ITEP in Moscow. Much extra material has been added.

<<量子色动力学讲义/LECTURE>>

书籍目录

Preface Notation and Conventions Introduction: Some History

PART 1: FOUNDATIONS

Lecture 1 Yang-Mills Field

1.1 Path Ordered Exponentials. Invariant Actions

1.2 Classical Solutions

Lecture 2 Instantons

2.1 Topological Charge

2.2 Explicit Solutions

Lecture 3 Path Integral

3.1 Conventional Approach

Quantum

3.2 Euclidean Path Integral

3.3 Holomorphic Representation

3.4 Grassmann Dynamic Variables

Mechanics

Lecture 4 Quantization of Gauge Theories

4.1 Dirac Quantization Procedure

4.2 Path Integral on the Lattice

Lecture 5 0-Vacuum

5.1 Quantum Pendulum

5.2 Large Gauge Transformations in Non-Abelian Theory

PART 2: PERTURBATION THEORY

Lecture 6 Diagram Technique in Simple and Complicated Theories

6.1 Feynman Rules from Path Integral

6.2 Fixing the Gauge

Lecture 7 When the Gauge is Fixed

7.1 Gribov Copies

7.2 Ward Identities

7.3 Ghosts and Unitarity

7.4 BRST Quantization

Lecture 8 Regularization and Renormalization

8.1 Different Regularization Schemes

8.2 Renormalized Theory as an Effective Theory. Slavnov-Taylor Identities

Lecture 9 Running Coupling Constant

9.1 One-loop Calculations

9.2 Renormalization Group. Asymptotic Freedom and Infrared Slavery

9.3 Observables. Ambiguities. Anomalous Dimensions

Lecture 10 Weathering Infrared Storms

10.1 Bloch Nordsieck Cancellation

10.2 Non-Abelian Complications. Coherent States

Lecture 11 Collinear Singularities: Theory and Phenomenology

11.1 Double Logarithmic Asymptotics

11.2 Jet Cross Sections

11.3 DIS and KLN

PART 3: NONPERTURBATIVE QCD

APPENDIX UNITARY GROUPS

BIBLIOGRAPHY

INDEX

版权说明

本站所提供下载的PDF图书仅提供预览和简介, 请支持正版图书。

更多资源请访问:<http://www.tushu007.com>